ATOMIC ENERGY Letter

THE FIRST AND ONLY

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Dear Sir:

The Senate filibuster against the Administration's measure to revise the Atomic Energy Act (1946) came to an end last Saturday night. Attempts were being made by a group of Democratic Senators to prevent a vote being made on S.3690, the bill to drastically revise the Atomic Energy Act, which had been reported for consideration only three weeks before the July 31st adjournment deadline. The debate was provoked by two issues; the first over the Tennessee Valley Authority, and the other over the bill itself. The TVA issue was a result of the President's order, on June 17th, telling the USAEC to negotiate a contract with Middle South Utilities, Inc., and the Southern Co., to build a $107 million steam plant at West Memphis, Ark., to feed 600,000 kw. of electrical energy into the TVA system to replace power TVA provides for the gaseous diffusion plant producing uranium-235 at Paducah, Ky. The bill provided authority to the USAEC to do this. The debate on the bill was over its specific provisions. The bill would amend the Atomic Energy Act (1946) to provide for private development of nuclear energy plants; authorize compulsory licensing of nuclear patents for a period of five years, after which Federal control over the patents would lapse; and provide for the exchange of limited data on nuclear weapons with friendly powers. Opponents of the bill had claimed that it would enable a few industrial giants, now operating USAEC plants under contract, to monopolize atomic power development to the exclusion of smaller firms; create a patent monopoly among these companies; and that no safeguards to the public interest were provided. A result of the debate was an amendment, added to the bill, which would authorize the USAEC, and other Federal agencies, to construct and operate nuclear power plants and to dispose of surplus power to public and privately owned utilities; so-called Federal "yardstick" plants.

As a result of some nine months of study by experts of the North Atlantic Treaty Organization, a report has recently been given to the British Joint Chiefs of Staff that warfare in the future will "inevitably" be atomic. Other conclusions reached by the study, which is believed to be the most comprehensive yet made of atomic warfare, are that the maximum destruction will occur at the outbreak of hostilities, so that gradual mobilization will be ineffective. Individuals who worked on the report, under the direction of Gen. A. M. Gruenther, commander of NATO forces in Europe, included American, British, and other Allied officers.

The $19.5 million in sinking fund debentures, to finance Gunnar Mines at Lake Athabasca, Saskatchewan, has been oversubscribed; the offering, which was made last week, bears 5% interest and matures in 1960. With the release of the prospectus accompanying the offering, Gunnar gave first details of its contract with the Canadian Government-owned Eldorado Mining and Refining, Ltd., which will buy Gunnar's uranium ores. The contract estimates that Gunnar will have a profit of $18,204,000 before taxes and write-offs in its production to 1960. The company will be legally exempt from income taxes for the first three years of its operations.

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BUSINESS NEWS...in the nuclear field...

CONFERENCE ON ATOMIC ENERGY SCHEDULED:- The Third Annual Conference on Atomic Energy in Industry, sponsored by National Industrial Conference Board, to be held Oct. 13-16, 1954, Hotel Commodore, New York City, will hear addresses by official representatives of 17 foreign nations. Sessions will be held on the current outlook on atomic power costs; uses of atomic by-products in medicine; uses of radioisotopes in process industries; public safety and atomic power reactors; economic factors in locating atomic reactors; legal problems of peacetime atomic developments; uses of radioisotopes in agriculture and in metal and metal-fabricating industries; peacetime utilization of atomic fission products; and research and low-power nuclear reactors.

SODIUM-GRAPHITE EXPERIMENTAL REACTOR TO BE BUILT:- The first sodium-graphite reactor in the United States is now to be developed and constructed in a project sponsored jointly by North American Aviation. Inc., and the USAEC. The project, a step toward development of economic nuclear power, will cost about $10 million. The reactor will be an experimental model of a full-scale power reactor already in the preliminary design stage. It will use metallic fuel elements of either slightly enriched uranium or a combination of thorium and uranium-233, and is expected to be in operation by mid-1957. North American Aviation, which has been the principal contractor of the USAEC in the development of the sodium-graphite reactor, has agreed to assume up to $2.5 million of the total cost, and to supply the reactor site, at the company's field test laboratory in the Santa Susana mountains, north of Los Angeles, Calif. The company also will operate the reactor plant experimentally for approximately two years under terms of a recently signed contract with the USAEC. Title to the equipment will remain with the Government. The present project will resemble the full-scale plant designed by the company, but will generate only about 20,000 kilowatts of heat. The plant will have no electricity-generating equipment. (In addition to its sodium-graphite development work, North American Aviation has built two low power "water boiler" homogeneous reactors for the USAEC, one at the company's Downey, Calif., plant and one at the USAEC's research facility at Livermore, Calif., which is operated by the University of Calif. The sodium-graphite reactor is one of the five types on which the USAEC is concentrating in its five-year program for the development of economic nuclear power. Another type is the pressurized water reactor, which will be placed in the central station nuclear power plant Duquesne Light Company is putting up at Shippingsport, Pa. The other reactor types are the homogeneous, the fast reactor, and the experimental boiling water reactors.)

NEW FINANCIAL ANALYSES NOW MADE AVAILABLE:- Brokerage houses that have recently prepared financial analyses of firms active in the nuclear energy field include Harris, Upham & Co. (New York) who have issued a pamphlet titled "Investing in the Atomic Age". Seven phases of the atomic energy industry, in which industrial firms are participating, are covered by this pamphlet. Freehling, Meyerhoff & Co. (Chicago) have issued a study of Worthington Corp. under the heading "Capital Growth through Atomic Energy".

NEW BOOKS & OTHER PUBLICATIONS...on nuclear topics...

Proceedings of the University Research Reactor Conference. The material presented in the formal papers, in the round table discussions, and in the question periods of this Conference which was held in Oak Ridge February 17-18, 1954. Delegates from 51 universities in 31 states, representatives of some 30 industrial concerns, government agencies, etc., joined in discussions of the relative merits of nuclear reactors as compared to other research machines, significant characteristics of such reactors, and the variety of research possibilities available with these reactors. 221 pages.-- Office of Technical Services, Wash. 25, D. C. ($1.35)

Bibliography of Books & Published Reports on Gas Turbines, Jet Propulsion, and Rocket Power Plants, by E. F. Fiock and C. Halpern, National Bureau of Standards. Supplement to Circular 509; covers through Dec. 1953. Includes references to nuclear power in this field. 110 pages.--Superintendent of Documents, Wash. 25, D. C. (50¢)

The Man in the Thick Lead Suit, by Daniel Lang. A collection of articles, written in a popular vein, on certain aspects of nuclear work in the U. S. 207 pages. --Oxford University Press, New York 11. ($3.50)

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

FROM THE MANUFACTURERS:- Model 14L Universal Shield is, essentially, a set of building blocks from which may be constructed a multi-purpose shield, applicable to scintillation well counting, and to all standard methods of counting with end-window scintillation and Geiger counters. Each of the lead-filled parts provides 2-inch lead shielding, and each is machined at the edges to match adjacent parts. Accessory parts include a steel supporting stand, a sample holder which fastens to the stand, and Geiger tube adapters for use with and without the shielding parts. It is possible to acquire individual parts, either one at a time, or in groupings, for special purposes. The average background of scintillation well counters in the Model 14 L Universal Shield is said to be reduced to 3 cps. (End-window counters, containing the 1⅛D x ⅝" crystal featured in this manufacturer's LAX12P Scintimeter line, perform at a background rate of approximately 1.5 cps.)--R-C Scientific Instrument Co., Inc., Playa del Rey, Calif.

NOTES:- A new cancer teletherapy unit featuring universal control and a built-in computer to direct a pre-set treatment pattern with radioactive cesium was shown last week at Rockford, Ill. by W. F. and John Barnes Co., the manufacturers, to officials of the USAEC, the Teletherapy Evaluation Board (of the Oak Ridge Institute of Nuclear Studies), and others. The Barnes company, which was one of several to submit proposals for building the unit, constructed it to the requirements of the Medical Division of the Oak Ridge Institute and its affiliated Board. The Barnes unit consists essentially of a lead shield to house the radioactive source, a heavy steel iris to control the size of the radiation beam, and mechanisms for rotating the unit, opening and closing the radiation port, and rotating the built-in treatment table. The unit is suspended from an 11-ft. circular track attached to the ceiling of a room, and weighs 4½-tons. Automatic control devices and the built-in computer keep the beam focused on the tumor of the patient being treated throughout the various movements with the therapist sitting at a control console directing the treatment pattern. A 1540-curie source of radioactive cesium, prepared by Oak Ridge National Laboratory, is used as a test source for the unit. The unit will shortly be sent to Oak Ridge, where a period of testing the characteristics of the unit will be carried out before it becomes available for treatment of patients.

NEW LITERATURE:- A brochure titled "Geological Surveys with Radioactivity Measuring Equipment" has now been published by Nuclear Instrument & Chemical Corp., Chicago 10. The brochure describes scintillation counting equipment and how it may be used as an aid in aerial exploration for oil or for uranium ores. The equipment described is said to have been proven in actual field use.

NUCLEAR RESEARCH PROJECTS...in the United States...

Some 20 unclassified physical research contracts with universities and private research institutions have now been let by the USAEC. Five are new contracts; the remainder are renewals of contracts which have been in force. Generally for a term of one year, the contracts were let as part of the USAEC's continuing policy of utilizing private research laboratories in conducting research related to nuclear energy. While mainly in the fields of chemical reactions, two studies will involve directly nuclear reactors: Design of a Low-Powered Reactor, at the State College of Washington, and Research Reactor Studies, at the University of Michigan.

Encouragement is now being given by the USAEC to private research studies on the metallurgy of uranium and its alloys, although such research projects must have prior approval of the USAEC's Office of Classification. Additionally, technical reports cannot be published or otherwise released without USAEC authorization. Financial support will be given worthy research projects, in return for information developed. Those interested should write the USAEC's Division of Research, Wash. 25, D.C.

Efficient liquid scintillators for carbon-14 determinations have been developed by research workers B.L.Funt, R. W. Pringle and W. Turchinetz, University of Manitoba, they told a recent Winnipeg meeting of the Royal Society of Canada. Pulse heights of 75% of anthracene were obtained by removing oxygen from a toluene solution of DPO. The investigators also studied plastic scintillators, since plastic and liquid scintillators have an advantage over organic crystals such as stilbene and anthracene in that large volumes are easily prepared.

RAW MATERIALS...radioactive mineral & ore development & production....

UNITED STATES: Salt Lake City, Utah:- Texas oil operator M. A. S. Makris, of Houston, who heads Pan-American Uranium Corp., recently described in this city his plans for entering the uranium mining business. Mr. Makris said that the firm, which he described as a closed corporation of less than 15 stockholders, and which is capitalized at $5 million, plans to buy uranium claims and properties throughout the Colorado Plateau area of southeastern Utah and western Colorado. "The operations will proceed along the lines of the oil business, "Mr. Makris said. "Of every 10 oil wells, you expect to get 2 good ones."..... Denver, Colo.-Another Houston, Texas, oil operator, L. H. Cullen, heads the Atomic Power Uranium Co., which is headquartered here. A public offering is being made of the firm's stock, which is being underwritten by Continental Securities, Houston. The firm holds under lease and assignment 10 claims in Eagle and Mesa counties..... Phoenix, Ariz.-The accelerating interest in uranium prospecting in Arizona is reflected in the more than 1,500 mining claims which so far this year have been filed in Gila country, center of uranium prospecting activity. Almost all the claims were for uranium. In May of this year some 580 claims were filed; last year, only 40 were filed.....(Pacing this increasing prospecting activity in Arizona, Colorado, etc., are the stock offerings being made to finance and exploit the findings. Recently filed with the Securities & Exchange Commission are prospectuses of such new companies as Acme Uranium Mines, Denver; Cherokee Utah Uranium Corp., Salt Lake City; Geronimo Uranium Mining Corp., Salt Lake City; Interstate Uranium, Inc., Salt Lake City; Monarch Uranium Corp., Provo, Utah; Scott Uranium, Inc., Loveland, Colo.; Strategic Minerals Development Co., Reno, Nev.; Ula Uranium, Inc., Denver; Uranium Exploration Co., Inc., Salt Lake City; Uranium Industries, Inc., Grand Junction, Colo.; Utco Uranium Corp., Denver; Whitelock Uranium Co., Inc., Price, Utah)..... Grand Junction, Colo.-A review of sampling procedures at major uranium ore-buying stations on the Colorado Plateau and adjacent areas is now being conducted by the Colorado School of Mines Research Foundation, Inc., under a USAEC contract..... New York, N.Y.-The annual and a special stockholder's meeting was held in the last fortnight in New York by Consolidated Uranium Mines, Inc. A proposal by management to increase the capitalization of the firm from $750,000 to $1,875,000, without changing the par value but correspondingly increasing the number of authorized shares, was approved by shareholders.

CANADA:- A new uranium mineral discovery, which may prove of some importance, has now been made in the Lake Athabasca area. The find was made by Nesnorm Exploration, Ltd., which has staked a total of 37 claims. Although no assay reports have as yet been made, samples have shown visible pitchblende. The company is privately financed; principals are veteran uranium prospector J. C. Nesbitt, and H. C. Norman. The find is attributed to results of an aerial reconnaissance of the area; Nesnorm operates its own aircraft, for this purpose.....A large scale underground development program is now being started by Algom Uranium Mines at its Quirke Lake, Blind River district property. (Meanwhile, Algom is conducting negotiations for sale of its ore to Eldorado Mining & Refining, the Canadian-Government owned purchasing agency.) Recent developments at the Quirke Lake property have been completion of a drill hole enabling further calculation of available ore. Tonnage calculations had been made of 6,457,000 tons averaging 0.11% uranium oxide per ton, on a drilled slope depth of 910-ft; the new drill hole indicates good tonnage chances on the downward extension of this zone.

IONIZING RADIATION & RADIOISOTOPES...news & notes...

The risk to the human race through exposure to radiation from atomic and thermonuclear bombs is very great, A. H. Sturtevant, California Institute of Technology, recently told the Pullman, Wash., meeting of the American Association for Advancement of Science. He pointed out that recovery from moderate effects of direct radiation is possible, since low level doses over long intervals apparently do not have cumulative tissue effects. However, he observed, radiation also affects the genes. For that reason, he noted, all high-energy radiation, even of low intensity and brief duration must be considered as potentially dangerous to the exposed individual. In man, he said, high-energy radiation produces mutations, the frequency of which increases with dosage . Such genetic effects are cumulative, he stated, and generally deleterious, and result in the production of numerous defective indiviuals.

ATOMIC PATENT DIGEST...new grants in the nuclear field...

Control rod drive mechanism. Comprises (in part) the combination of a differential gear mechanism, with a housing, and a driving shaft journaled within the housing while a driven shaft is also journaled within the housing parallel to the driving shaft. A sleeve is rotatably disposed about the driven shaft, with a first driven gear affixed to the driven shaft, and a second driven gear affixed to the sleeve. Driving means are connected to the driven shaft for rotating the shaft, with a clutch mechanism having one position locking the shaft to the sleeve and a second position locking the sleeve to the housing. U. S. Pat. No. 2,682,785 issued July 6, 1954; assigned to United States of America (USAEC). (Inventors: B. C. Cerutti and H. V. Lichtenberger.)

Self-contained radiation meter. Comprises (in part) a hermetically sealed envelope having a visually transparent wall portion with a portion of the internal surface of the envelope being conductive. A chargeable element is mounted wholly within the envelope in insulated relation to it, with a portion of this element being maintained in contact with an ionizable gas. A source of charged particle radiation is located within the envelope in charge-changing relation to this element. Shielding means prevent radiation emitted by the source from acting on the gas. U.S. Pat. No. 2,683,222 issued July 6, 1954; assigned to United States of America (USAEC). (Inventors: G. Failla and H. H. Rossi.)

Shielding window against radioactivity and composition for it. A process of preventing formation of color and precipitates in a zinc bromide solution for shielding windows during gamma radiation. Comprises (in part) adding hydroxylamine hydrochloride to the solution. U. S. Pat. No. 2,683,650 issued July 13, 1954; assigned to United States of America (USAEC). (Inventors: W. B. Doe.)

Separation of americium and curium from aqueous solutions. A process of separating americium and curium values contained as a mixture in a solution. Comprises (in part) contacting an aqueous concentrated nitric acid medium and a substantially water-immiscible alkyl phosphate medium, with at least one of these media containing the americium and curium in solution, whereby the curium values are preferentially held by the alkyl phosphate medium, while the americium values are preferentially held by the aqueous medium; and separating an alkyl phosphate phase from an aqueous phase. U. S. Pat. No. 2,683,655 issued July 13, 1954; assigned to United States of America (USAEC). (Inventors: D. F. Peppard and P. R. Gray.)

Variable voltage wave form generator. In a circuit for developing a voltage waveform having several adjustable points in response to an input voltage wave, the combination comprising (in part) a differential amplifier developing positive and negative output voltages in response to an input voltage with the polarity being with respect to ground and the waveform of such voltages being substantially the same; several triode tubes connected as cathode followers: and additional electronic circuitry. U. S. Pat. No. 2,683,807 issued July 13, 1954; assigned to United States of America (USAEC). (Inventor: G. D. Paxson.)

Mass spectrometer. In a mass spectrometer, the improvement which comprises (in part) a source of substantially constant voltage for energizing the focusing means; means for periodically applying successively different voltages from the source to the focusing means to successively focus ions of different specific mass on the ion collector; and means for superimposing a slowly varying unidirectional voltage on the voltage applied from the source to the focusing means. U. S. Pat. No. 2,683,811 issued July 13, 1954; assigned to Consolidated Engineering Corp., Pasadena, Calif. (Inventor: C. F. Robinson).

Alpha ray tachometer. Comprises (in part) a member whose characteristics of motion are to be measured, several small areas of radioactive material located thereon, a masking element adjacent the portion of the member having the radioactive areas, the element having several small apertures in it. Means responsive to the energy emitted by the radioactive material are located adjacent the masking element which is remote from the member, the member being movable relative to the masking element and responsive means. U. S. Pat. No. 2,683,813 issued July 13, 1954 to H. Friedman, Arlington, Va.

Sincerely,

The Staff,
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